SECTION 4. COCKPIT EN ROUTE INSPECTIONS

161. OBJECTIVE OF EN ROUTE INSPECTIONS. The primary objective of cockpit en route inspections is for an inspector to observe and evaluate the inflight operations of a certificate holder within the total operational environment of the air transportation system. En route inspections are one of the FAA's most effective methods of accomplishing its air transportation surveillance objectives and responsibilities. These inspections provide the FAA with an opportunity to assess elements of the aviation system that are both internal and external to an operator.

A. Elements of the aviation system which are internal to the operator and that can be observed during en route inspections, are items such as the following:

- Crewmembers
- Operator manuals and checklists
- Use of MEL's and CDL's
- Operational control functions (dispatch, flight-following, flight-locating)
- Use of checklists, approved procedures, and safe operating practices
- Crew coordination/cockpit resource management
- Cabin safety
- Aircraft condition and servicing
- Training program effectiveness

B. Elements of the aviation system which are external to the operator and that can be observed during en route inspections, are items such as the following:

- Airport/heliport surface areas
- Ramp/gate activities
- Airport construction and condition
- Aircraft movements
- ATC and airway facilities
- ATC and airspace procedures
- IAP's, SID's, and STAR's
- Navigational aids
- Communications

163. COCKPIT EN ROUTE INSPECTION AREAS. Inspectors should consider all inspection areas, both internal and external to the operator, to be of equal importance. Four general inspection areas have been identified for observation and evaluation by inspectors during en route inspections (see figure 6.2.4.1., Cockpit En Route Inspection Job Aid). These inspection areas are as follows:

- Crewmember
- Flight conduct
- Airport/heliport
- ATC/airspace

A. The "crewmember" inspection area applies to both flight crewmembers and cabin crewmembers. Inspectors should evaluate such items as crewmember knowledge, ability, and proficiency by directly observing crewmembers performing their respective duties and functions. The applicable job aid contains a list of reminder items which should be observed in the crewmember inspection area. These items are not all-inclusive but represent the types of items inspectors should evaluate during a cockpit en route inspection.

B. The "flight conduct" inspection area relates to 10 specific phases of flight which can be observed during an en route inspection. The job aid contains a list of the

items that should be evaluated by inspectors during these phases of flight. These items are not all-inclusive and in some cases (such as "powerback") may not be applicable to the flight conducted. Inspectors are, however, encouraged to observe, evaluate, and report on as many of these items as possible.

NOTE: Inspectors that are unfamiliar with the operator's specific procedures for operating the aircraft, should comment in their inspection reports on any item they believe should be brought to the POI's attention. Inspectors must use good judgment concerning whether to comment on these items when debriefing crewmembers.

C. The "airport/heliport" inspection area pertains to the various elements of airports or heliports that are passed through during the flight such as runways, taxiways, ramps, and aircraft ground movements. Inspectors should observe and evaluate as many of these elements as possible during an en route inspection.

D. The "ATC/airspace" inspection area pertains to the various elements of Air Traffic Control and national or international airspace systems. These elements should be observed and evaluated by inspectors during en route inspections. From an operational standpoint, these evaluations are a valuable information source which can be used not only to enhance safety with respect to air traffic control and the airspace system, but also to enhance the effectiveness of en route and terminal facilities and procedures.

E. Although these four general inspection areas cover a wide range of items, they are not the only areas that can be observed and evaluated during cockpit en route inspections. Inspectors may have the opportunity to evaluate many other areas, such as line station operations, flight control procedures, and flight attendants in the performance of their duties. These types of inspection areas can often be observed before a flight begins, at en route stops, or at the termination of a flight.

165. GENERAL COCKPIT EN ROUTE INSPECTION PRACTICES AND PROCEDURES.

A. Before conducting en route inspections, it is important that inspectors become familiar with the operating procedures and facilities used by the operator. Inspectors can obtain such familiarization by reviewing pertinent sections of the operator's manuals and by asking questions of, and obtaining briefings from, the POI or other inspectors who are acquainted with the operator's procedures and facilities. The inspector is encouraged to comment on any procedure believed to be deficient or unsafe in the inspection report. The inspector must use good judgment, however, when debriefing crewmembers about procedures that may be specifically approved for that operator.

B. POI's are responsible for coordinating with their assigned operators to ensure that each operator has established procedures to be used by inspectors for scheduling the observer's seat (jumpseat). POI's must ensure that an operator's procedures allow inspectors to have free, uninterrupted access to the jumpseat. Inspectors should, however, make jumpseat arrangements as far in advance as possible. Since inspectors may have sudden changes in schedule, and may not always be able to provide the appropriate advance notice, POI's must ensure that the operator's procedures are flexible and permit use of an available jumpseat on short notice.

C. Whenever possible, inspectors should plan cockpit en route inspections in a manner that will avoid disruption of operator-scheduled line checks and IOE flights. Should an inspector arrive for a flight and find a line check or IOE in progress, the inspector must determine whether or not it is essential that the cockpit en route inspection be conducted on that flight. If it is essential, the operator must be so advised by the inspector and must make the jumpseat available to the inspector. If the cockpit en route inspection can be rescheduled and the objectives of the inspection can still be met, the inspector should make arrangements to conduct the inspection on another flight. When a required checkride is being conducted by a check airman from the forward jumpseat and the en route inspection is essential, the inspector should occupy the second jumpseat, if one exists. On IOE flights, the check airman should normally occupy one of the pilot seats and the inspector should occupy the forward jumpseat. When it is essential that the en route inspection be conducted on an aircraft that does not have two jumpseats, the check airman must occupy a pilot seat and the inspector should occupy the jumpseat. In such a case, the flight crewmember not being checked must either be seated in the cabin or not accompany the flight.

D. An inspector should begin a cockpit en route inspection a reasonable amount of time before the flight (approximately 1 hour) by reporting at the operations area or at the gate, as specified by the POI. There the inspector must first complete the necessary jumpseat paperwork for inclusion in the operator's passenger manifest and weight and balance documents. The flightcrew should then be

located by the inspector. After the inspector gives a personal introduction to the flightcrew which includes presentation of FAA Form 110A, the inspector must inform the PIC of the intention to conduct an en route inspection. The inspector should then request that, at a time convenient for the flightcrew, the flightcrew present both their airman and medical certificates to the inspector for examination. Also, the inspector should request that, at a convenient time, the flightcrew present flight information such as weather documents, NOTAM's, planned route of flight, dispatch or flight release documents, and other documents with information about the airworthiness of the aircraft to the inspector for examination.

E. Sometimes an inspector cannot meet and inform the PIC of the intention to conduct an en route inspection before boarding the aircraft. In such a case, when boarding the aircraft, the inspector should make appropriate introductions, present FAA Form 110A for the PIC's inspection at the earliest convenient opportunity, and inform the flightcrew of an intention to conduct a cockpit inspection. In this situation a flight attendant will usually be at the main cabin entrance door. One of the flight attendant's primary duties is to ensure that only authorized persons enter the aircraft such as ticketed passengers, caterers, and authorized company personnel. Therefore, an inspector should be prepared to present FAA Form 110A and any applicable jumpseat paperwork to the flight attendant as identification before entering the cockpit. When boarding the aircraft, an inspector should also avoid unnecessarily impeding passenger flow or interrupting flight attendants during the performance of their duties. Also, during this time an inspector usually has ample opportunity to observe and evaluate the operator's carry-on baggage procedures and the gate agent's or flight attendant's actions concerning oversized items. Once inside the cockpit, the inspector should request an inspection of each flight crewmember's airman and medical certificates, if not previously accomplished. When the flightcrew has completed reviewing the aircraft logbooks (or equivalent documents), the inspector should inspect the logbooks to determine the airworthiness status of the aircraft.

F. The inspector should wear a headset during the flight. During cockpit en route inspections, inspectors must try to avoid diverting the attention of flight crewmembers performing their duties during "critical phases of flight." Inspectors must be alert and point out to the flightcrew any apparent hazards such as conflicting traffic. If during an en route inspection, an inspector becomes aware of a potential violation or that the flightcrew is violating a regulation or an ATC clearance, the inspector must immediately inform the PIC of the situation.

G. Inspectors should use the Cockpit En Route Inspection Job Aid (see figure 6.2.4.1.) while conducting these inspections. This job aid contains a list of reminder items for the specific inspection areas that should be observed and evaluated. It also includes applicable key PTRS words and codes to facilitate the writing of the inspection report. Items may be evaluated during an en route inspection which are not listed on the job aid. For such items, inspectors should use the "other" PTRS comment code for the appropriate inspection area. Inspectors can also use this job aid to make notes during the inspection which can later be transferred to the PTRS Data Sheet.

167. SPECIFIC COCKPIT EN ROUTE INSPECTION PRACTICES AND PROCEDURES.

A. Once situated in the cockpit, the inspector should check the jumpseat oxygen and emergency equipment (if applicable) and connect the headset to the appropriate interphone system. The PIC or a designated crewmember should offer to give the inspector a safety briefing. If the PIC does not make such an offer, the inspector should request a briefing. It is important that the inspector monitor all radio frequencies being used by the flightcrew to properly evaluate ATC procedures, flightcrew compliance, transmission clarity, and radio phraseology. The monitoring of these frequencies also ensures that the inspector does not inadvertently interfere with any flightcrew communications. Inspectors should continuously monitor these frequencies to remain aware of the progress of the flight.

B. Inspectors should observe and evaluate the crew during each phase of flight. This should include an evaluation of crewmember adherence to approved procedures and a proper use of all checklists. The inspector should also observe the PIC's crew management techniques, delegation of duties, and overall conduct. All crewmembers must follow sterile cockpit procedures. Some of the areas that should be observed and evaluated during each flight phase are as follows:

(1) *Preflight:* Inspectors should determine that the flightcrew has all the necessary flight information including the appropriate weather, dispatch, or flight-release information; flight plan; NOTAM's; and weight and balance information. MEL items should be resolved in accordance with the operator's MEL and appropriate maintenance

procedures. Inspectors should observe the flightcrew performing appropriate exterior and interior preflight duties in accordance with the operator's procedures.

(2) *Predeparture:* Inspectors should observe the flightcrew accomplishing all predeparture checklists, takeoff performance calculations, and required ATC communications. The flightcrew should use coordinated communications (via hand signals or the aircraft interphone) with ground personnel. Often pushback or powerback clearance must be obtained from the appropriate ATC or ramp control facility. When weight and balance information is transmitted to the aircraft by company radio during the outbound taxi, the flightcrew should follow the operator's procedures as to which crewmember receives the information and completes the final takeoff performance calculations and which crewmember monitors the ATC frequency. The inspector should observe the following:

- Accomplishment of checklists during taxi
- Adherence to taxi clearances
- Control of taxi speed
- Compliance with hold lines
- Flightcrew conduct of a pre-takeoff briefing in accordance with the operator's procedures

(3) *Takeoff:* The takeoff procedure should be accomplished as outlined in the operator's approved maneuvers and procedures document. Inspectors should observe and evaluate the following items or activities during the takeoff phase:

- Aircraft centerline alignment
- Use of crosswind control techniques
- Application of power to all engines
- Takeoff power settings
- Flightcrew call-outs and coordination
- Adherence to appropriate takeoff or V speeds
- Rate and degree of initial rotation
- Use of flight director, autopilot, and autothrottles
- Gear and flap retraction schedules and limiting airspeeds
- Compliance with the ATC departure clearance or with the appropriate published departure

(4) *Climb:* The climb procedure should be conducted according to the outline in the operator's approved maneuvers and procedures document. Inspectors should observe and evaluate the following items and activities during the climb phase of flight:

- Climb profile/area departure
- Airspeed control
- Navigational tracking/heading control
- Powerplant control
- Use of radar, if applicable
- Use of autoflight systems
- Pressurization procedures, if applicable
- Sterile cockpit procedures
- Vigilance
- Compliance with ATC clearances and instructions
- After-takeoff checklist

(5) *Cruise:* Procedures used during cruise flight should conform to the operator's procedures. Inspectors should observe and evaluate the following areas during the cruise phase of flight:

- Cruise mach/airspeed control
- Navigational tracking/heading control
- Use of radar, if applicable
- Use of turbulence procedures, if applicable
- Monitoring fuel used compared to fuel planning
- Awareness of mach buffet and maximum

performance ceilings

- Coordination with cabin crew
- Compliance with oxygen requirements, if applicable
- Vigilance
- Compliance with ATC clearances and instructions

(6) *Descent:* Procedures used during descents should conform to the operator's procedures. Inspectors should observe and evaluate the following areas during the descent phase of flight:

- Descent planning
- Crossing restriction requirements
- Navigational tracking/heading control
- Use of radar, if applicable
- Awareness of Vmo/Mmo speeds and other speed restrictions
- Compliance with ATC clearance and instructions
- Use of autoflight systems
- Pressurization control, if applicable
- Area/situational awareness
- Altimeter settings
- Briefings, as appropriate
- Coordination with cabin crew
- Sterile cockpit procedures
- Completion of appropriate checklist
- Vigilance

(7) *Approach:* Procedures used during the selected approach (instrument or visual) should be accomplished as outlined in the operator's maneuvers and procedures document. Inspectors should observe and evaluate the following areas during the approach phase of flight:

- Approach checklists
- Approach briefings, as appropriate
- Compliance with ATC clearances and instructions
- Navigational tracking/heading and pitch control
- Airspeed control, V_{ref} speeds
- Flap and gear configuration schedule
- Use of flight director, autopilot, autothrottles
- Compliance with approach procedure
- Sinkrates
- Stabilized approach in the full landing configuration
- Flightcrew call-outs and coordination
- Transition to visual segment, if applicable

(8) *Landing:* Procedures used during the landing maneuver should conform to those outlined in the operator's maneuvers and procedures document. Inspectors should observe and evaluate the following areas during the landing phase of flight:

- Before-landing checklist
- Threshold crossing height (TCH)
- Aircraft centerline alignment
- Use of crosswind control techniques
- Sinkrates to touchdown
- Engine spool-up considerations
- Touchdown and rollout
- Thrust reversing and speedbrake procedures
- Use of autobrakes, if applicable

- Braking techniques
- Diverting attention inside the cockpit while still on the runway
- After-landing checklist

(9) *Prearrival:* Prearrival and parking procedures should conform to the operator's procedures as outlined in the appropriate manual. Inspectors should evaluate crew accomplishment of after-landing checklists, groundcrew parking, and passenger-deplaning procedures.

(10) *Arrival:* Inspectors should observe and evaluate the flightcrew complete postflight duties such as postflight checks, aircraft logbook entries, and flight trip paperwork completion and disposition.

C. During the en route inspection, inspectors should observe and evaluate other inspection areas, such as ATC and airspace procedures and airports or heliports the flight transits during the cockpit en route inspection.

(1) When evaluating airports or heliports, inspectors should observe the condition of surface areas, such as ramp and gate areas, runways, and taxiways. The following list contains other areas which may be observed and evaluated by inspectors during cockpit en route inspections:

- Taxiway signs, markers, sterile areas, and hold lines
- Ramp vehicles, equipment, movement control
- Aircraft servicing, parking, and taxi operations
- Obstructions, construction, and surface contaminants (such as ice, slush, snow, fuel spills, rubber deposits)
- Snow control, if applicable
- Security and public safety

(2) During cockpit en route inspections, inspectors have the opportunity to observe and evaluate ATC operations and airspace procedures from the vantage point of the aircraft cockpit. Inspectors may observe and evaluate the following areas from the cockpit:

- Radio frequency congestion, overlap, or blackout areas
- Controller phraseology, clarity, and transmission rate
- ATIS
- Use of full call signs
- Simultaneous runway use operations
- Clearance deliveries
- Acceptable and safe clearances
- Aircraft separation standards
- Acceptability of instrument approach procedures, departure procedures, and feeder routings

D. After the flight has been terminated, the inspector shall debrief the crew on any discrepancies observed and on any corrective actions that should be taken.

(1) If the inspector observed a violation during the flight and intends to recommend enforcement action or intends to make critical comments concerning the crew's performance, the inspector must inform the flightcrew during the debriefing.

(2) If so requested, the inspector may offer to mail a copy of the completed PTRS Data Sheet to those crewmembers whose performances were commented upon as insufficient. To do so, the inspector shall record the crewmember's current address and certificate number.

169. COCKPIT EN ROUTE INSPECTION JOB AID. Figure 6.2.4.1 is an example of the Cockpit En Route Inspection Job Aid which is available on the district office Job Aid Disk.

170. - 180. RESERVED.

FIGURE 6.2.4.1
AIR CARRIER COCKPIT EN ROUTE INSPECTION JOB AID

PTRS ACTIVITY: 1624 DATE:	AIR CARRIER	FLT NO.	A/C REG NO.		MAKE	MOD/SERIES
PIC NAME:	CERT #	BASE	FROM	TO	RESULTS	HB REF VI.2.4.

U = UNACCEPTABLE; P = POTENTIAL; I = INFORMATION; E = EXCEEDS

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KNOWLEDGE	101
ABILITY/PROFICIENCY	103
QUAL/CURRENCY	105
CERT/RATINGS	109
BRIEFINGS	111
MANUAL CURRENCY	203
MANUAL AVAILABILITY	209
CREW COMPLEMENT	601
CREW COORDINATION	737
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* Weather	--
* NOTAMS	--
* Acft Inspection	--
* T/O Data	--
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* Cockpit Setup	--
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* Pushback	--
* Engine Start	--
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* Powerback	--
* Taxi Speed	--
* Procedures	--
* Rwy Alignment	--
* X - Wind Control	--
* Power Applied	--
* Power Setting	--
* Call-outs	--
* T/O Speeds	--
* Rotation	--
* Gear/Flap Speeds	--
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CLIMB	727
* Hdg/Speed Cntrl	--
* Power Settings	--
* Procedures	--

CRUISE	729
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* Navigation	--
* Procedures	--
* Hi/Lo Buffet	--
* Oxygen Reqmnt's	--
* Fuel Mgmt	--
DESCENT	731
* Planning	--
* Speed Control	--
* Navigation	--
* Pressurization	--
* Altitude Calls	--
STAR	707
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